CSCI 1130 Introduction to Computing Using Java 2017-2018 First Term

Department of Computer Science and Engineering
The Chinese University of Hong Kong

Due date: 20 September 2017 (Wed) **Assignment 1** Full mark: 100

Expected normal time spent: 3 hours

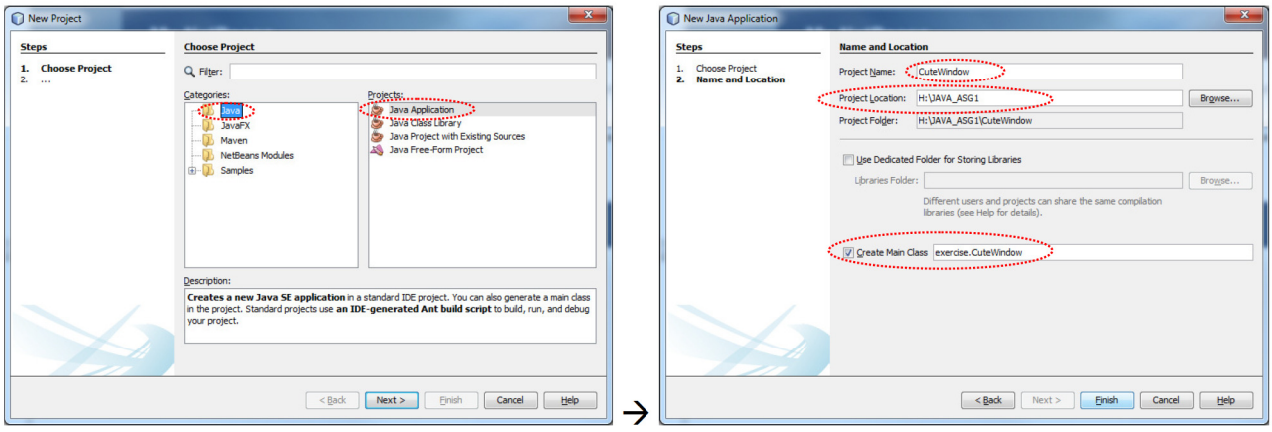
Relax: this is a simple while very useful assignment to kick-off our course.

Aims: 1. Get acquaint with the NetBeans Java programming environment.
2. Learn the structure and format of a Java program by example.

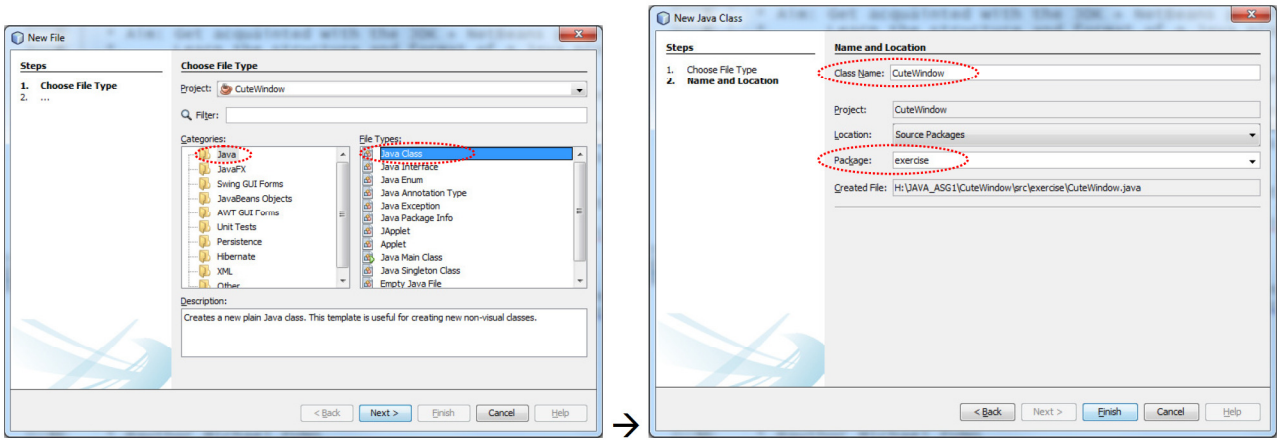
Procedure:

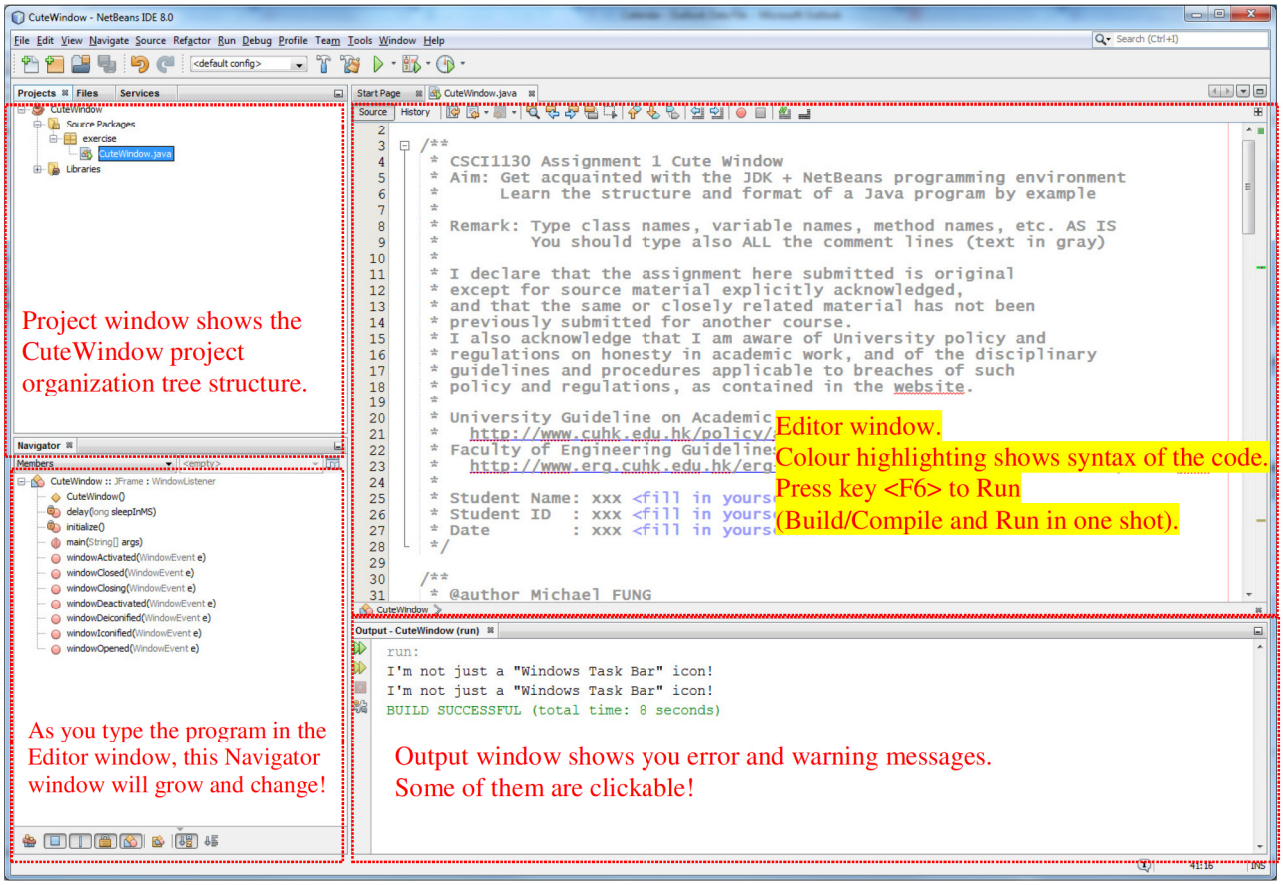
1. Use a computer with *both* JDK and NetBeans installed. Better though, install them yourself! Check our lecture and tutorial notes on Blackboard for details.
To begin with, start NetBeans.
We accept either version 8.x. The following illustrations are based on version 8.

2. Under NetBeans, create a New Project [Java] → [Java Application]. Name the project **`CuteWindow`** and put it under the folder **`H:\JAVA_ASG1`** or some other location you prefer. Tick the box "Create Main Class" with name **`exercise.CuteWindow`** Click Finish.



3. If you haven't ticked the box, no regret! You may create a New File [Java] → [Java Class]. Name the class **`CuteWindow`** and put it under the project **`CuteWindow`**. Let the Location be Source Packages and put it in package **`exercise`**. Click Finish.





4. Key in the following program *with comment and proper style/indentation carefully*.
There are BUGS!!! Spot and Correct them! Fill in also your own student ID, name and date.
You may delete some of the default code/ comment generated by NetBeans.

```
/**
 * CSCI1130 Assignment 1 Cute Window
 * Aim: Get acquainted with the JDK + NetBeans programming environment
 *      Learn the structure and format of a Java program by example
 *
 * Remark: Type class names, variable names, method names, etc. AS IS
 *         You should type also ALL the comment lines (text in gray)
 *
 * I declare that the assignment here submitted is original
 * except for source material explicitly acknowledged,
 * and that the same or closely related material has not been
 * previously submitted for another course.
 * I also acknowledge that I am aware of University policy and
 * regulations on honesty in academic work, and of the disciplinary
 * guidelines and procedures applicable to breaches of such
 * policy and regulations, as contained in the website.
 *
 * University Guideline on Academic Honesty:
 *   http://www.cuhk.edu.hk/policy/academichonesty
 * Faculty of Engineering Guidelines to Academic Honesty:
 *   https://www.erg.cuhk.edu.hk/erg/AcademicHonesty
 *
 * Student Name: xxx <fill in yourself>
 * Student ID  : xxx <fill in yourself>
 * Date        : xxx <fill in yourself>
 */

package exercise;

import javax.swing.*;
import JAVA.awt.*;
```

```java
import java.awt.event.*;
import java.util.Random;

/**
 * CuteWindow
 * Introduction to Computing: Java Assignment
 * @author Michael FUNG
 * @since  4 September 2017
 */
public CLASSSSS CuteWindow extends JFrame implements WindowListener {

    // constructor
    public CuteWindow() {
        // super construction by the super class
        super();
        initialize();
    }

    // initialization
    private void initialize() {
        // register this object as its own window listener
        addWindowListener(this);
    }

    // make the CPU busy to slow down the program, a delay loop
    private void delay(long sleepInMS) {
        long startTime = System.currentTimeMillis();
        while (System.currentTimeMillis() < startTime + sleepInMS) {
            int dummy = 1; // nothing to do
        }
    }

    /**
     * Implementing the WindowListener interface
     * showing cute behavior on window closing
     * @param e is an object describing the window event
     */
    @Override
    PUBLIC void windowClosing(WindowEvent e) {
        // fancy thing: jitter the window for a while
        Point windowLocation = getLocation();

        double round = 6;
        double max_radius = 30;
        double step = 150;

        double limit = 2 * Math.PI * round;
        double angle_increment = limit / step;
        double radius_increment = max_radius / step;

        for (double angle = 0,   radius = 0;
             angle < limit;
             angle += angle_increment,   radius += radius_increment)
        {
            setLocation((int) (Math.cos(angle) * radius) + windowLocation.x,
                        (int) (Math.SIN(angle) * radius) + windowLocation.y);
            delay(5);
        }

        // quits the program here
        System.exit(0);
    }

    // method bodies with curly braces in different styles
    @Override
    public void windowOpened(WindowEvent e) { }

    @Override
    public void windowClosed(WindowEvent e) {
    }
```

```
    @Override
    public void windowIconified(WindowEvent e)
    {
        Random randomNumberGenerator = new Random();
        setLocation(randomNumberGenerator.nextInt(340),
                    randomNumberGenerator.nextInt(250));
    }

    @Override
    public void windowDeiconified(WindowEvent e)
    {
        System.out.println("I'm not just a \"Windows Task Bar\" icon!");
    }

    @Override
    public void windowActivated(WindowEvent e) {}

    @Override
    public void windowDeactivated(WindowEvent e)
    {
    }

    // starting point of the program
    int main() {
        // create a new CuteWindow object
        CuteWindow window = new CuteWindow();
        // set properties of the CuteWindow object
        window.setSize(400, 200);
        window.setLocation(240, 360);
        window.setTitle("Cute Window");
        window.add(new JButton("/* I'm Cute! *\\"));
        window.setVisible(False);
        // the program DOES NOT end here since a window is opened
    }
}
```

5. **Under NetBeans, pick menu [File] → [Project Properties] → Categories [Run]. Browse and pick `exercise.CuteWindow` as [Main Class]. Try toggling some options under Categories [Documenting] too. Click OK to dismiss the Project Properties dialog.**

6. **If you have many opened projects, click menu [Run] → [Set Main Project].**

7. Build the project (press the function key [F11] on the keyboard). If there are errors, don't panic. Double-click on the first error message in the Output window. Check the error, correct it and re-compile. Feel tired? Take a rest.

8. When you finish and there is no more error, you are ready to try out the program.

9. Run the application (press the function key [F6] on the keyboard). Enjoy your work.

Your Task:

1. **Locate** your NetBeans project folder, e.g. **`H:\JAVA_ASG1\`**.

2. ZIP the project folder **`CuteWindow`** and Submit the file **`CuteWindow.zip`** via our Online Assignment Collection Box on Blackboard **https://blackboard.cuhk.edu.hk**

Marking Scheme and Notes:

1. The submitted program should be free of any typing mistakes, compilation errors and warnings.

2. Comment/remark, indentation, style is under assessment in every programming assignments unless specified otherwise. This program gives you an example of a well-formatted source file. Variable naming, proper indentation for code blocks and adequate comments are important.

3. Remember to do your submission before 6:00 p.m. of the due date. No late submission would be accepted.

4. If you submit multiple times, **ONLY** the content and time-stamp of the **latest** one would be counted. You may delete (i.e. take back) your attached file and re-submit. We ONLY take into account the last submission.

University Guideline for Plagiarism

Attention is drawn to University policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details may be found at http://www.cuhk.edu.hk/policy/academichonesty/. With each assignment, students are required to submit a statement that they are aware of these policies, regulations, guidelines and procedures.

Faculty of Engineering Guidelines to Academic Honesty

MUST read: https://www.erg.cuhk.edu.hk/erg/AcademicHonesty
(you may need to access via CUHK campus network/ CUHK1x/ CUHK VPN)

Things to TRY!

1. **Locate** your NetBeans project folder and find a file `CuteWindow.jar`. Double click it!

2. **Change** the spiral speed and/ or range.

3. **Add** your own cute behaviors.